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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,622	03/09/2004	Taiichiro Aoki	KNI-185-A	2811

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CARRIER BLACKMAN AND ASSOCIATES
24101 NOVI ROAD
SUITE 100
NOVI, MI 48375

EXAMINER

KARLS, SHAY LYNN

ART UNIT	PAPER NUMBER
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1744

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

8

Office Action Summary	Application No.	Applicant(s)	
	10/796,622	AOKI ET AL.	
	Examiner	Art Unit	
	Shay L. Karls	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 3,6,7,9 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,8,10,11 and 13-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

This application contains claims 3, 6-7, 9, 12 drawn to an invention nonelected with traverse on 5/30/06. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Objections

While claim 1 includes a positive recitation of the nozzle, it is suggested that the applicant amend claim 1 to positively recite the nozzle in the body of the claim rather than in the preamble of the claim for clarity purposes.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 includes certain limitations that render the claim indefinite. For example, the claim states "a longitudinal axis of the brush is parallel to said slit-like discharge opening" however, the nozzle and its slit-like discharge opening is not positively claimed. The applicant is not claiming the combination of a nozzle and an apparatus to clean a nozzle, but only the apparatus. Therefore, any limitations in the claim regarding the cleaning apparatus with respect to the nozzle are considered indefinite since the nozzle is positively recited. The claimed invention must result in a structural difference between the claimed invention and the prior art in

Art Unit: 1744

order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. (PGPub 2003/0127046) in view of Eriksson (USPN 6321688).

Zehner teaches a cleaning apparatus for a paint spray gun nozzle. The apparatus comprises a cleaning tank (12) containing a cleaning liquid (64). There is a cylindrical brush (52), which is disposed in the cleaning liquid (figure 4) for cleaning a nozzle (112). The brush is rotatable around a longitudinal axis (as shown by arcuate arrow in figure 4 and as described in paragraph 0016). Zehner teaches all the essential elements of the claimed invention however fails to teach that the nozzle has a slit-like discharge opening and that the brush can be reciprocated horizontally and vertically (claim 1) and that there are mechanisms that allow for

Art Unit: 1744

the movement (claim 8). Eriksson teaches a cleaning apparatus comprising a longitudinal brush (29) that reciprocates vertically and horizontally (figure 3c and 3d). There is a swinging arm (59') for moving the brush horizontally and an extension arm (81) for moving the brush vertically. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's brush so that it reciprocated vertically and horizontally as taught by Eriksson since the reciprocating brush will ensure that the entire portion (tip and sides) of the paint spray gun nozzle will get cleaned without spreading contamination (col. 2, lines 23-44). Additionally, it would have been obvious to modify the shape of the orifice of Zehner's nozzle so that the gun comprises a slit-like opening since it is known in the art to use various shapes of nozzle orifices on paint spray guns depending on the use of the spray paint. Using a slit-like opening will cause the spray paint to be diffused in a fan-like manner, which leads to an even distribution of paint allowing for even coverage. Therefore, a slit-like opening in the nozzle that is substantially the same length as the brush would have been an obvious modification to one of skill in the art since changing the shape of the orifices is well known in the art and one of skill in the art would know what size and shape the orifice should be based on the use of the nozzle.

Regarding claim 14, the nozzle is capable of being adapted to discharging a solution onto a semiconductor wafer. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The nozzle of Zehner is capable of performing the task of discharging a solution to a semiconductor wafer since there is no structural difference between the nozzle of the present invention and Zehner.

Art Unit: 1744

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046) in view of Eriksson ('688) as applied to claim 1 above and further in view of Tsutsumi et al. (USPN 6594457).

Zehner in view of Eriksson teaches all the essential elements of the claimed invention however fails to teach that the hair structure of the brush is arranged obliquely with respect to the longitudinal axis of the brush. Tsutsumi teaches a longitudinal brush with the bristles (211) that are arranged obliquely (figure 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's bristles so that they are obliquely arranged as taught by Tsutsumi to increase the life expectancy of the brush. Bristles that are slanted rather than perpendicular to the longitudinal axis undergo stress when in use and therefore, will break more often than slanted bristles. Additionally, the slant of the bristles will create an induction force caused by the cleaning bias, and also a shearing force caused by the mechanical scrubbing of the brush. The induction force and the shearing force will act on the unwanted material on a nozzle and the material will be captured on the brush more effectively (col. 8, lines 33-39).

Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046) in view of Eriksson ('688) as applied to claim 1 above and further in view of Batchelder (USPN 2164443).

Zehner in view of Eriksson teaches all the essential elements of the claimed invention however fail to teach a brush cleaning means (claim 4) or a comb (claim 10) for scraping material off the long-length brush as it is rotated. Batchelder teaches a brush cleaning means (63) with teeth (66) adjacent a brush (22) with bristles. The cleaning means combs through the

Art Unit: 1744

bristles as the brush rotates. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's cleaning apparatus with a cleaning means such as a comb attached to the tank as taught by Batchelder so that the long-length brush will be kept clean since the comb-type element will remove any accumulation of material that accrue on the bristles (page 3, col. 2, lines 20-34).

Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046), Eriksson ('688) and Tsutsumi ('457) as applied to claim 2 above and further in view of Batchelder (USPN 2164443).

Zehner, Eriksson and Tsutsumi teach all the essential elements of the claimed invention however fail to teach a brush cleaning means (claim 5) or a comb (claim 11) for scraping material off the long-length brush as it is rotated. Batchelder teaches a brush cleaning means (63) with teeth (66) adjacent a brush (22) with bristles. The cleaning means combs through the bristles as the brush rotates. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner, Eriksson and Tsutsumi's cleaning apparatus with a cleaning means such as a comb attached to the tank as taught by Batchelder so that the long-length brush will be kept clean since the comb-type element will remove any accumulation of material that accrue on the bristles (page 3, col. 2, lines 20-34).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. (PGPub 2003/0127046) in view of Eriksson (USPN 6321688) as applied to claim 1 above and further in view of Tsutsumi ('457).

Zehner in view of Eriksson teaches all the essential elements of the claimed invention however fails to teach that the hair structure of the brush is arranged obliquely with respect to

Art Unit: 1744

both the longitudinal axis of the brush and the circumferential direction of the brush such that the hair structure contacts the lower end of the nozzle. Tsutsumi teaches a longitudinal brush with the bristles (211) that are arranged obliquely with respect to both the longitudinal axis and the circumferential direction of the brush. Figure 2 shows the bristles arranged obliquely with respect to the longitudinal axis and figure 3 shows the bristles arranged obliquely with respect to the circumferential direction of the brush since the bristles are positioned on the roller at a diagonal. Having the bristles positioned on the roller at a diagonal causes the bristles to be oblique to the circumferential direction. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's bristles so that they are obliquely arranged as taught by Tsutsumi to increase the life expectancy of the brush. Bristles that are slanted rather than perpendicular to the longitudinal axis undergo stress when in use and therefore, will break more often than slanted bristles. Additionally, the slant of the bristles will create an induction force caused by the cleaning bias, and also a shearing force caused by the mechanical scrubbing of the brush. The induction force and the shearing force will act on the unwanted material on a nozzle and the material will be captured on the brush more effectively (col. 8, lines 33-39).

Claims 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. (PGPub 2003/0127046) in view of Eriksson (USPN 6321688).

Zehner teaches a cleaning apparatus for a paint spray gun nozzle (108). The apparatus comprises a cleaning tank (12) containing a cleaning liquid (64). The tank has an open upper end (24) adapted to receive the lower end of the nozzle (figure 1). There is a cylindrical brush (52), which is disposed in the cleaning liquid (figure 4) for cleaning a nozzle (112). The brush is

Art Unit: 1744

rotatable around a longitudinal axis (as shown by arcuate arrow in figure 4 and as described in paragraph 0016). Zehner teaches all the essential elements of the claimed invention however fails to teach that the brush can be reciprocated horizontally and vertically (claim 1) and that there are mechanisms that allow for the movement (claim 8). Eriksson teaches a cleaning apparatus comprising a longitudinal brush (29) that reciprocates vertically and horizontally (figure 3c and 3d). There is a swinging arm (59') for moving the brush horizontally and an extension arm (81) for moving the brush vertically. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's brush so that it reciprocated vertically and horizontally as taught by Eriksson since the reciprocating brush will ensure that the entire portion (tip and sides) of the paint spray gun nozzle will get cleaned without spreading contamination (col. 2, lines 23-44).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046) in view of Eriksson ('688) as applied to claim 15 above and further in view of Tsutsumi et al. ('457).

Zehner in view of Eriksson teaches all the essential elements of the claimed invention however fails to teach that the hair structure of the brush is arranged obliquely with respect to the longitudinal axis of the brush. Tsutsumi teaches a longitudinal brush with the bristles (211) that are arranged obliquely (figure 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's bristles so that they are obliquely arranged as taught by Tsutsumi to increase the life expectancy of the brush. Bristles that are slanted rather than perpendicular to the longitudinal axis undergo stress when in use and therefore, will break more often than slanted bristles. Additionally, the slant of the bristles will

Art Unit: 1744

create an induction force caused by the cleaning bias, and also a shearing force caused by the mechanical scrubbing of the brush. The induction force and the shearing force will act on the unwanted material on a nozzle and the material will be captured on the brush more effectively (col. 8, lines 33-39).

Claim 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner et al. ('046) in view of Eriksson ('688) as applied to claim 15 above and further in view of Batchelder (USPN 2164443).

Zehner in view of Eriksson teaches all the essential elements of the claimed invention however fail to teach a brush cleaning means (claim 17) or a comb (claim 19) for scraping material off the long-length brush as it is rotated. Batchelder teaches a brush cleaning means (63) with teeth (66) adjacent a brush (22) with bristles. The cleaning means combs through the bristles as the brush rotates. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Zehner's cleaning apparatus with a cleaning means such as a comb attached to the tank as taught by Batchelder so that the long-length brush will be kept clean since the comb-type element will remove any accumulation of material that accrue on the bristles (page 3, col. 2, lines 20-34).

Response to Arguments

Applicant's arguments filed 10/30/06 have been fully considered but they are not persuasive. The arguments are addressed in the order that they are presented in the remarks.

In response to applicant's argument that Zehner and Eriksson are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned,

Art Unit: 1744

in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Zehner is analogous art since it is reasonably pertinent to a problem with which the applicant was concerned. The reference as well as the applicant acknowledges a problem of cleaning dirty nozzles and both the reference and the applicant attempt to address the issue of cleaning the nozzle by means of a rotary brush. Regarding Eriksson, the reference is analogous since it addresses the issue of cleaning the sides and tip of elongated members. While the elongated member of the present invention and Eriksson are different, the device used to clean the members functions in the same manner.

The applicant argues that it would not have been obvious to combine Zehner and Eriksson since they are non-analogous however, they are analogous since both teach devices use to clean elongated members. The devices are essentially the same however, what they are used to clean is different. The elements that the devices clean are the intended use of the device. Therefore, Zehner teaches a device to clean the tip of an elongated element and Eriksson teaches a device to clean both the tip and the sides of the elongated element. Therefore, they are analogous art since they are both reasonably pertinent to a particular problem of cleaning elongated elements.

The applicant additionally argues that the modification of Zehner with Eriksson would make Zehner inoperable for its intended use and that by allowing the brush to move vertically and horizontally would mean that a slot would need to be cut into the sidewall of the container and the solvent would then drain out. The Examiner maintains the rejection as stated above since the modification of the allowing the brush to move vertically and horizontally would not make the device inoperable. One of skill in the art would be able to modify the invention of

Art Unit: 1744

Zehner so that the solvent would not drain out as shown in the present invention. The present invention has a brush that operates horizontally and vertically and yet no fluid is drained from the housing. Therefore, one of skill in the art would know to what steps to take to allow the brush to perform two movements without causing the solvent to be drained from the housing. Additionally, the Examiner would like to point out that the claim language does not state that the brush is completely emerged within cleaning liquid. The claim only states that the brush is disposed in the liquid. If a slot was formed in the sidewall to allow for vertical and horizontal movement and one of skill in the art could not figure a way to prevent the solvent from draining, the slot would not extend below the existing brush shaft (56). Therefore, the lower bristles of brush would still be located within the solvent since the solvent would only drain from the housing until the shaft of the brush.

Regarding the argument of claim 2, the applicant is correct in stating that it should have been rejected by Zehner in view of Eriksson and not solely in view of Zehner. This was the Examiner's intention at the time the Office Action was written since claim 2 depends directly from claim 1 and claim 1 is rejected by Zehner in view of Eriksson. This was an overlook on the Examiner's part and it has been corrected above.

Additionally, the applicant argues that Tsutsumi is non-analogous to the applicant's field of endeavor however, it is analogous since the brush is directed to removing residue from a surface. The brush of the present invention is used to remove residue from a nozzle while the brush of Tsutsumi is used to remove residue from a transfer drum. The reference is reasonably pertinent to the problem with which the inventor is concerned; removing residue.

Art Unit: 1744

Regarding the argument for claims 4 and 10, the applicant is correct in stating that is should have been rejected by Zehner in view of Eriksson and not solely in view of Zehner. This was the Examiner's intention at the time the Office Action was written since the claims depend ultimately from claim 1 and claim 1 is rejected by Zehner in view of Eriksson. This was an overlook on the Examiner's part and it has been corrected above.

The applicant argues that Batchelder is non-analogous to the applicant's field of endeavor however, it is analogous since it is used to clean debris from brushes. Batchelder is reasonably pertinent to the problem with which the inventor is concerned, since both the applicant and Batchelder address the problem of debris on the rotating brush and both teach a device to remove debris from the brush.

Regarding the argument for claims 5 and 11, the applicant is correct in stating that is should have been rejected by Zehner in view of Eriksson and not solely in view of Zehner. This was the Examiner's intention at the time the Office Action was written since the claims depend ultimately from claim 1 and claim 1 is rejected by Zehner in view of Eriksson. This was an overlook on the Examiner's part and it has been corrected above.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Art Unit: 1744

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. The applicant amended claim 1 to positively recite the nozzle and added new claims 13-19. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shay L. Karls whose telephone number is 571-272-1268. The examiner can normally be reached on 7:00-4:30 M-Th, alternating F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on 571-272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1744

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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GLADYS JP CORCORAN
SUPERVISORY PATENT EXAMINER